

Macquarie Point Multipurpose Stadium

Public Hearing Technical Note

Technical Note Number	6
Subject	Cricket specific design elements and roof design testing
Date	7 July 2025

1. Background

- 1.1 On 25 June 2025, during the course of the Proponent opening its case, there was questioning by the Panel about how cricket would be accommodated in the facility.
- 1.2 As the Panel is aware, Cricket Australia, Cricket Tasmania and the Tasmania Government have, entered into a Heads of Agreement which acknowledges that a suitable multipurpose all-weather roofed stadium presents a world leading opportunity to play the highest levels of cricket across all formats of the game uninterrupted.
- 1.3 This Technical Note 6:
 - (a) In section 2, notes some of the key design features that have already been included to accommodate cricket in the venue; and
 - (b) In section 3, outlines the collaborative approach that is proposed to eliminate or mitigate shadow risks within the first fixed roof stadium designed to host all forms of cricket.
- 1.4 This Technical Note has been prepared in collaboration with Cricket Tasmania and Cricket Australia.
- 1.5 Noting that testing and investigative works in relation to the suitability of the roof are underway, for the purpose of understanding economic impacts, the Panel should proceed on the assumption that cricket will be played at the stadium. This is in keeping with the inclusion of cricket specific facilities which are key elements in the stadium's design. As with any integrated planning assessment, it is not part of the assessment to change or second guess the scope of the proposal.

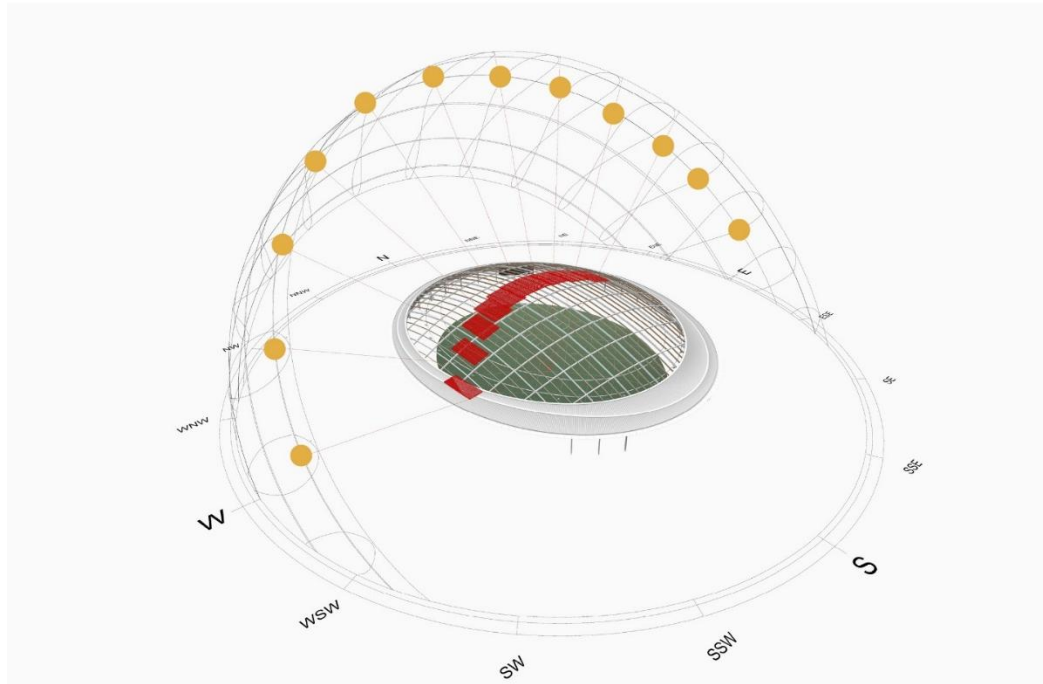
2. Cricket specific design elements

- 2.1 The multipurpose stadium has been designed to include specific features to support the facility hosting all forms of cricket. These include:
 - (a) internal roof height clearance of 49 metres between the top of the playing field to the inside of the apex of the roof, which was determined by utilising Hawkeye data to project the maximum trajectories of miss-hits and sixes;
 - (b) dedicated outdoor practice pitches. There are 16 pitches provided in this space, with run up area, to enable a mixture of pitches to be used and rested;
 - (c) extended internal player warm-up facilities, noting cricket require a longer space than other sporting modes;
 - (d) infrastructure to provide sight screens;
 - (e) dedicated media & broadcast facility to the south to ensure there is sufficient space in the specified location (behind the bowler's arm) to meet international cricket requirements; and
 - (f) a premium chair's lounge offering behind the bowler's arm (most desired location for cricket) under the media and broadcast centre.

- 2.2 As part of the detailed design process, additional premium food and beverage spaces have been included to reflect feedback from Cricket Tasmania and Cricket Australia.

3. Collaboration on shadow risk mitigation

- 3.1 As with all new cricket venues the stadium will need to be accredited by the International Cricket Council (ICC) and Cricket Australia for international and domestic cricket matches to be played there. This is the case for all new cricket venues. All parties recognise the importance of engaging early with the relevant authorities to streamline formal accreditation processes.
- 3.2 Accreditation cannot take place until after the stadium is constructed.
- 3.3 As a roofed stadium (first of its kind for cricket), an important part of seeking this accreditation is mitigating or eliminating the risk of the roof structure casting shadows and impacting on play. understanding the impact of the shadows (and possible mitigation techniques) from the roofing structure on players, as well as on the spectator and broadcaster viewer experience in the stadium during sunny conditions.
- 3.4 Shadows are formed as a result of light, which travels in straight lines, being obstructed by an object. While the structure supporting the domed roof of the stadium has been streamlined to minimise the size and dimensions of the supporting beams, and will be at least in part diffused, the risk of shadow requires mitigation. Shadow diffusion is the result of the intrusion of ambient reflected light, which softens shadow edges and lightens the colour of the shadows.
- 3.5 While all stadia cast some shadows on the field of play and on the pitch the presence of a fixed roof structure presents a risk of there being a greater frequency of shadows across the pitch block during the middle of the day which does not occur in other cricket venues, and may impact playing conditions.
- 3.6 Some work has been undertaken on a number of different approaches to mitigating the impact of the shadows on the cricket pitch block, including modifications to the location of structural roof members in the summer sun arc (to reduce the frequency of the shadows) as well as investigations into a range of options for sunlight diffusion using the roof materials.
- 3.7 To progress the development and assess the effectiveness of options to mitigate or eliminate shadows across the pitch block during the middle of the day, a testing plan will be designed and implemented. This will focus on diffusing shadows by testing an agreed range of treatments to the ETFE pillows on the roof.
- 3.8 The plan will involve the construction of a 'rig' to simulate the roof structure and carry a range of treated roofing materials to allow testing of the impact on shadow intensity, the light on the ball and 'seeing' conditions for players. This testing may also provide additional insights into the impact of any roof material treatments on turf growth and health for both the outfield and cricket pitches.
- 3.9 At 49 metres (internal clearance between the roof beam and field) above the field of play, the shadow will be diffused to some extent due to the distance, removing the solid edges that a shadow cast will have when caused by a close object. This has been observed by representatives of the Multipurpose Stadium Project Team (which includes Macquarie Point Development Corporation, design team and Stadiums Tasmania) during a study tour of the Forsyth Barr Stadium at Dunedin in New Zealand.
- 3.10 However, testing both on the site, and in a simulated cricket environment, in summer when cricket is played and the sun is at its highest, will be important to ensure the proposed mitigation and elimination methods identified above can be tested, reviewed and agreed to provide the required playing conditions for relevant accreditation without modifications to the design response.
- 3.11 Testing will include exploring the level of shadow diffusion or shadow removal that can be achieved through adjusting the transparency levels of the roof materials, and the location of these, based on mapping the trajectory of the sun during peak summer season when the risk of shadows is the greatest. An example of this is shown in the Figure below:



- 3.12 Alongside the construction of the 'rig', a simulated computer model will be developed by specialist lighting engineers to further assess:
- (a) the extent and intensity of shadowing across the field of play at different times of the day and year;
 - (b) the potential for shadowing to impact players, umpires, spectators and broadcasters; and
 - (c) measures by which identified risks could be mitigated if required.
- 3.13 The computer model will be verified by a lighting mock-up and then subsequently by the onsite test rig.
- 3.14 The testing process will be overseen by a team comprising of the Multipurpose Stadium Project Team, Cricket Tasmania and Cricket Australia, and will be supported by an expert panel which is expected to include current and former players and match officials and will work in consultation with other key stakeholders including broadcasters and other hirers.
- 3.15 By identifying the point at which the various ETFE treatments are able to effectively diffuse or eliminate shadows, and testing those findings with all relevant experts and stakeholders, the parties are striving to identify an effective solution/s that can be adopted.
- 3.16 Engagement will continue throughout the design and testing process to ensure information sharing and the final design specification captures the findings agreed by the parties.